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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,779	04/14/2004	Kyung-Kyu Kang	8733.1001.00	4667
30827 7590 01/19/2007 MCKENNA LONG & ALDRIDGE LLP 1900 K STREET, NW WASHINGTON, DC 20006			EXAMINER QI, ZHI QIANG	
			ART UNIT	PAPER NUMBER
			2871	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/19/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/823,779

Applicant(s)

KANG ET AL.

Examiner

Mike Qi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/25/06; 9/13/06</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-5, 10-16 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,739,880 (Suzuki et al) in view of US 5,8189,550 (Kadota et al).

Regarding claims 1,11 and 16, Suzuki teaches (col.9, line 62 – col.11, line 3;

Figs.5a- 5c) a liquid crystal display panel comprising:

- a black matrix (BM) formed of a resin material (col.10, lines 1-2), at a predetermined region of a first substrate (SUB2) and at a boundary region of pixels;
- a color filter (FIL) on the black matrix corresponding to the pixels;

- a passivation layer (PSV2) (as an overcoat layer) on the first substrate having the black matrix and the color filter;  
(concerning claims 11 and 16)
- a common electrode (COM) made of ITO on the passivation layer (PSV2) (overcoat layer);
- a seal pattern (SL) on the overcoat layer;
- a second substrate (SUB1) having a thin film transistor, the second substrate being attached to the first substrate by the seal pattern.

Suzuki does not explicitly teach that the thickness of the overcoat layer is between approximately about 1.2 $\mu$ m to about 5 $\mu$ m on the first substrate, and such thickness of the overcoat layer absorbing an external force and preventing compression or depression of the black matrix.

**Kadota** teaches (col.5, line 61 – col. 6, line 3; Fig.1) a liquid crystal display device having a black matrix (8), a color filter (9) on the black matrix and a planarization layer (10) (as overcoat layer) on the color filter, and the planarization layer (as overcoat layer) is made of acrylic resin or a polyimide resin having a thickness of 1.0 to 3.0  $\mu$ m to prevent impurities in the color filter from spreading into the liquid crystal, and as a result of formation of such planarization layer (as overcoat layer), so that a substrate structure is obtained with excellent liquid crystal orientation characteristics.

In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists (see MPEP 2144.15 I.).

Concerning such thickness of the overcoat layer on the substrate absorbing an external force and preventing compression or depression of the black matrix that is the technical effect of such thickness of the overcoat layer, and the same structure has the same technical effect. As general available knowledge, because the overcoat layer against the black matrix, so that the overcoat layer having certain thickness when assembly the LCD, crimping the two substrates together would absorb an external force so as to prevent compression or depression of the black matrix, and that have been at least obvious.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the liquid crystal panel of Suzuki with the teachings of employing overcoat layer having a certain thickness as taught by Kadota, since the skilled in the art would be motivated for preventing impurities in the color filter from spreading into the liquid crystal and obtaining excellent liquid crystal orientation characteristics, and achieving the technical result of absorbing an external force so as to prevent compression or depression of the black matrix.

Regarding claims 2 and 12, Suzuki teaches (Figs. 5a-5c) that the black matrix (BM) is extended at least from the seal pattern (SL) formed region to one end of the portion of the first substrate (SUB2).

Regarding claims 3, 4, 13 and 14, Suzuki teaches (col.10, lines 1-5) that the black matrix is formed one of acrylic, epoxy and polyimide resin containing carbon black or black pigment.

Regarding claims 5 and 15, Suzuki teaches (col.10, lines 51-53) that the passivation layer (PSV2) (as overcoat layer) is an acrylic resin or an epoxy resin.

Regarding claims 10 and 21, Suzuki teaches (Fig.5a) that the black matrix (BM) partially overlap the seal pattern (SL)

4. Claims 6-9 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki and Kadota as applied to claims 1-5, 10-16 and 21 above, and further in view of US 5,481,388 (Aoya).

Regarding claims 6-9 and 17-20, Suzuki and Kadota teach the invention set forth above except for that a glass ball or glass fiber is added to the seal pattern in a weight ratio of about 1% or less.

Aoya teaches (col.2, lines 21-30) a liquid crystal display device wherein glass fiber in a weight ratio of 1% and glass ball are added into the seal pattern in order to hold a desired gap thickness at a sealing portion between upper and lower substrates, and the use of glass fiber having a diameter of 7.4  $\mu\text{m}$  and the use of glass ball having a diameter of 7.0  $\mu\text{m}$  (col.2, lines 22-23, 38-41). As per applicant's own disclosure (paragraphs 0077-0079, 0101-0103) that the number of support members (that is the glass balls or glass fibers) is varied according to a specific gravity or a weight ratio thereof, and as the generally used, if the diameter of the glass ball is between 3.8 to 7.5  $\mu\text{m}$ , approximately 150-550 glass balls are distributed in at least one of unit area of the seal pattern, and if the diameter of the glass fiber is between 3.8 to 7.5  $\mu\text{m}$ , approximately 30-200 glass fibers are distributed in at least one of unit area of the seal pattern. Such that the numbers of the glass balls or glass fibers is determined by the

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property of the glass balls or glass fibers, and certain gravity and certain weight ratio of the glass balls and glass fibers would determine the numbers of the glass balls and glass fibers.

Aoya further teaches (col.2, lines 54-57) that glass fiber can function as buffering pressure at the time of crimp, and glass ball can function as regulating gap thickness as a stopper.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the liquid crystal panel of Suzuki and Kadota with the teachings of adding glass ball or glass fiber as a support member to the seal pattern as taught by Aoya, since the skilled in the art would be motivated for hold the desired gap thickness at the sealing portion between upper and lower substrates, and using glass fiber as buffering pressure at the time of crimp and using glass ball as regulating gap thickness as a stopper.

### ***Response to Arguments***

5. Applicant's arguments filed on Dec. 12, 2006 have been fully considered but they are not persuasive.

In response to applicant's argument that the references do not teach the overcoat layer on the first substrate absorbing an external force and preventing compression or depression of the black matrix, it is respectfully pointed out to the applicant that it is a technical effect of such thickness of the overcoat layer, and the same structure has the same technical effect. As general available knowledge, because

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the overcoat layer against the black matrix, so that the overcoat layer having certain thickness when assembly the LCD, crimping the two substrates together would absorb an external force so as to prevent compression or depression of the black matrix, and that have been at least obvious. Further, Kadota teaches (col.5, line 61 – col. 6, line 3; Fig.1) a planarization layer (as overcoat layer) having a thickness of 1.0 to 3.0  $\mu\text{m}$ , and as a result, such substrate structure is obtained with excellent liquid crystal orientation characteristics, and In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists (see MPEP 2144.15 I.).

### ***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of



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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (571) 272-2299.

The examiner can normally be reached on M-T 7:30 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

*ZRR*  
Mike Qi  
Patent examiner  
Jan.16, 2007